CLAIMS

What is claimed is:

1. An illuminated keypad, comprising:

a substantially transparent keypad having a plurality of actuator buttons;

a plurality of switches residing substantially and correspondingly below the plurality of actuator buttons;

a display laminate layer residing between the plurality of actuator buttons and the plurality of switches providing a pattern of a symbol to be displayed through the substantially transparent keypad; and

a light source reflectively illuminating the pattern of the symbol by radiating light through the substantially transparent keypad.

2. The illuminated keypad of claim 1, wherein the display laminate is a reflective display laminate that comprises a driver layer having a conductor pattern with a plurality of conductor elements configured in a pattern of a symbol to be displayed on the substantially transparent keypad, a transparent conductor layer, and an electrically active ink layer disposed between the transparent conductor layer and the driver layer.

3. The illuminated keypad of claim 1, wherein the light source is selected from the group comprising an electroluminescent lamp film, a thin molded plastic light guide with light emitting diodes, and a thin film type of organic light emitting diode device.

4. The illuminated keypad of claim 3, wherein at least one light emitting surface of the light source faces toward the display laminate.

5. The illuminated keypad of claim 3, wherein the light source is located underneath a product housing between the product housing and the substantially transparent keypad and wherein at least part of the product housing has a convex surface and at least a part of the illumination source also has a convex surface shape.

6. The illuminated keypad of claim 1, wherein the substantially transparent keypad further comprises a bump or other structures molded in the substantially transparent keypad to better direct light toward an area having the pattern of the symbol.

7. The illuminated keypad of claim 6, wherein the bump or other molded structures resides substantially below the light source.

8. The illuminated keypad of claim 1, wherein each of the plurality of actuator buttons on the substantially transparent keypad includes a convex outer surface.

9. The illuminated keypad of claim 1, wherein the plurality of switches are a plurality of popple switches residing substantially and correspondingly below the plurality of actuator buttons;

10. The illuminated keypad of claim 9, wherein the active ink layer is one among an electrophoretic display ,a cholesteric liquid crystal display, a electrochromic display and any other reflective display types with sufficient flexibility, the transparent conductive layer is indium tin oxide, and the driver layer is an insulator layer such as Mylar or polyamide having a plurality of conductor elements disposed on the insulator layer.

11. The illuminated keypad of claim 1, wherein the illuminated keypad further comprises an anti-glare hard-coating applied to a surface of the display laminate.

12. An illuminated button mechanism, comprising:

a switch means for operating a button circuit in response to actuation of the button mechanism;

a display means disposed in correspondence with the switch means and comprising:

a driver layer having a conductor pattern configured in a pattern of a symbol to be displayed on the button mechanism;

a transparent conductor layer; and

an electrically active ink layer disposed between the transparent conductor layer and the driver layer; and

a light source reflectively illuminating the pattern of the symbol by radiating light through the transparent conductor layer.

13. A button mechanism as defined in claim 12, wherein the conductor pattern comprises: a first set of conductor elements corresponding to a first symbol; and a second set of conductor elements corresponding to a second symbol; wherein the first and second symbols are coincidentally located.

14. A button mechanism as defined in claim 12, wherein the switch means comprises a popple switch.

15. A button mechanism as defined by claim 14, further comprising a transparent actuating member disposed in correspondence with the popple switch, such that the display means is between the popple switch and the transparent actuating member.

16. The button mechanism of claim 15, wherein the transparent actuating member further comprises a bump or other structure integrally molded with the transparent actuating member in a keypad to better direct light toward an area having the pattern of the symbol.

17. The button mechanism of claim 12, wherein the light source is located underneath a product housing between the product housing the substantially transparent keypad.

18. The button mechanism of claim 12, wherein the light source is selected from the group comprising an electroluminescent lamp film, a thin molded plastic light guide with light emitting diodes, and a thin film type of organic light emitting diode device.

19. A portable electronic device having an illuminated keypad, the portable electronic device comprising:

a substantially transparent keypad having a plurality of actuator buttons;

a plurality of switches residing substantially and correspondingly below the plurality of actuator buttons;

a display laminate layer residing between the plurality of actuator buttons and the plurality of switches, wherein the display laminate comprises a driver layer having a conductor pattern configured in a pattern of a symbol to be displayed on the substantially transparent keypad, a transparent conductor layer; and an electrically active ink layer disposed between the transparent conductor layer and the driver layer; and

a light source reflectively illuminating the pattern of the symbol by radiating light through the substantially transparent keypad.

20. The portable electronic device of claim 19, wherein the light source is located underneath a housing for the portable electronic device between the housing and the substantially transparent keypad and the plurality of actuator buttons fit within a corresponding plurality of apertures in the housing.

21. The portable electronic device of claim 19, wherein the housing has a convex surface and the illumination source also has a convex surface shape.